



The Tennessee Forest Health Monitor

Department of Agriculture, Forestry Division



JULY, 2000

Hello and welcome to the second edition of Tennessee's Forest Health Highlights for 2000 as the third hatching of bluebirds begins.

Currently the Palmer Drought Index for West and Middle Tennessee and the Cumberland Plateau indicates a continuing moderate to severe **drought** in these regions. Some areas in West Tennessee are 8 inches behind normal in rainfall. Scattered locations southwest of Nashville on the Western Highland Rim and West Tennessee are averaging 1 to 15 dead and/or declining oaks per acre due to the **oak decline disease and insect complex**.

Gypsy moth defoliation has increased tremendously in Ohio and Virginia this summer. Over 80,000 acres were affected in Virginia including areas of the Blue Ridge Parkway northeast of Roanoke. White pine, rhododendron, and mountain laurel were heavily damaged in addition to various oak species. These tree species were refoliating by mid-July.

The first adult **Asian long-horned beetles** (ALB) emerged in Chicago the first week of July. Eradication costs to eliminate the ALB in New York and Chicago are expected to reach \$25 million by the end of this year.

TDA Division of Regulatory Services is conducting a survey of 30 industries that receive solid wood packaging from China. At an industry location which receives cast iron stove parts as Chinese cargo in Dickson County, Steve Powell's survey team found crates with the exotic beetle Hesperophanes campestris. This insect could become established in Tennessee because it is able to survive and develop despite the dryness of crates and pallets and feeds on ornamental hardwoods.

If you are having trouble **establishing seedlings** because of the dry weather, consider subsoiling as an alternative in open, pasture areas. This helps to reduce any vegetative competition, but you still need to wait for a good soaking rainfall before planting this fall or winter. Thanks to Pete Moditz for this information.

There are two new tactics for controlling **southern pine beetle** infestations using a beetle-produced inhibitor, verbenone. Phero Tech Inc. registered the repellent to reduce tree losses by disrupting spot growth. In 3 years of field tests, the verbenone-only tactic completely suppressed 69% of the treated infestations while the verbenone-plus-felling suppressed 86%. These pouch dispensers may be used as an alternative to cut and

leave in environmentally sensitive areas. A limited amount of verbenone will be available this year to those people who receive workshop certification for its use. For more information on verbenone, visit the web site at <http://everest.ento.vt.edu/~salom/Workshop/workshop.html> or contact Mark Dalusk at mjdalusk@arches.uga.edu.

Did you know that **oak decline** is a syndrome that involves the interaction of predisposing factors such as climate, site quality and tree age? Drought and insect defoliation increase the condition (see Field Reports on variable oak leaf caterpillars). Decline is characterized by a gradual, progressive dieback of the crown. Mortality typically results after several years but can be more rapid when severe drought and/or secondary pests such as Hypoxylon canker, Armillaria root rot or 2-lined chestnut borers are involved. Mature overstory trees are most heavily affected. See the Disease section of the Field Reports for locations of oak decline as well as a list of options for managing the disease.

The majority of the 95 **gypsy moth** catches have been in the eastern third of the state. The largest number of moths have been caught in Monroe (Tellico Plains area), Sevier (Pigeon Forge), and Campbell (north of LaFollette) Counties. Ground sprays this spring in Cumberland and Sevier Counties significantly reduced gypsy moth populations in 2 infested areas. A gypsy moth was caught in Perry County for the first time at Mousetail Landing State Park.

A USDA study on **solid wood packaging** indicates most packaging enters by ship and that 50% of the packaging comes from China and 25% from Europe. Crating and pallets with bark remaining (9% of the total) are at

greater risk for **exotic insects**. The treatment options are fumigation, heat treatment or returned to the country of origin.

Over 90% of all beetles caught this spring in East Tennessee beetle traps were **SPB** (74% in 1999). In the Unaka, Nolichucky and Ocoee Ranger Districts of the Cherokee National Forest predictions are for high levels of beetle activity to continue in currently-infested areas with increasing activity in neighboring areas. Outbreak levels are to continue in the northern Plateau in Scott County and in the valley/ridge area in Rhea County with increasing activity in non-outbreak locations. Only in Chester County in West Tennessee will beetle levels remain low but have more small spots throughout the summer and fall than in 1999. Major outbreaks of SPB normally last 3 to 5 years in absence of cold winters.

Kudzu has infested an estimated 7 million acres nationally. It can grow as much as a foot per day, blanketing everything in its path in timberlands, farmlands, and yards. To control established infestations can take 3 to 5 years of active management. The estimated loss in farm and timber production is \$50 million yearly. It is ranked as a severe threat in Tennessee because of its rapid dispersal and growth and ability to easily establish itself in native plant communities and displace native vegetation. Just ask the folks who worked on the timber blown down at Natchez Trace State Forest last year about kudzu.

Forest health monitoring plots are in their second year of measurement by John Mullins and some of his FIA crews. The results of the 1999 survey are included in a fact sheet at the end of this newsletter. Crown condition measurements showed loblolly and

Virginia pines with the highest percentage of trees with crown density and foliage transparency problems, respectively. The greatest frequency of damage on living trees was decay. Black locust, white and red oaks, Virginia pine and red maple were the most common dead trees. Ozone bioindicator (such as blackberry, milkweed, yellow poplar, white ash, sassafras and sweetgum) measurements are being taken for the first time this year as well as soil samples for nutrient analysis.

Seven new counties with **SPB** infestations in 2000 include Claiborne, Clay, Hawkins, Lewis, Marion, Putnam and Van Buren Counties. Pines attacked over winter are turning yellow about the same time as the green-infested trees of this summer requiring close examination to be sure SPB is still present in the trees. In Marion County, a few red topped pines turned into a 100 tree spot with the green-infested trees present at the end of July. Flights over forest industry land in Hardin and Wayne Counties in southwestern Middle Tennessee turned up 500 spots with some locations having green infested pines 100 feet out from red tops.

On May 27 about 3 PM, a **tornado** downed or damaged about 500 acres of red and white oaks and yellow poplar on Stewart State Forest in 20 separate locations (M. Huddleston). Damage consisted of about 2 miles of southwestern to northeastern strips of uprooted or damaged tops of trees from the ridgetop to the hollow. Forest industry land affected in Benton, Houston and Stewart Counties totaled about 1200 acres. Numerous tornado damaged trees dotted northwestern Perry and mideastern Hickman Counties during the same time (C. Gearhiser). Other tornadoes were reported in Weakley County and western Knox County where 30,000 people were without

power. A series of straight line winds also roared through Carroll, Henry, Lawrence, Shelby and Weakley Counties during the middle of July damaging trees in several communities (D. Barnett, T. Tynes).

Imported fire ant (IFA) quarantines include 29 counties from Memphis to Chattanooga. Lewis and Lincoln Counties and a portion of Maury County have added to the quarantine for this year. The quarantine prohibits the movement of hay, straw, grass sod or nursery stock from affected to unaffected area without a TDA inspection and permit. The US House and Senate voted in June to restore funding for the IFA quarantine for the fiscal year 2001. Damage and control measures cost approximately \$500 million per year in Texas alone.

Oak wilt is a systemic, wilting disease prevalent primarily in East Tennessee since the 1950's. It commonly kills trees of the red oak group in June causing a sudden loss of leaves. An aerial flight for the disease in Cumberland, Putnam and White Counties was negative this year.

Both **lindane** and **Dursban** can be used for control of **SPB** infestations if indicated by the label. The Cyren 4E brand of Dursban distributed by Oldham Chemical Company in Tennessee will be available after the ban on other formulations of Dursban is put into effect for retailers December 31, 2001. Non-structural wood formulations of Dursban continue at the same rate and usage as before the EPA ruling. Dursban use where children could be exposed in outside uses around homes and parks will not be allowed.

The average vertical spread of **decay** in upland trees of the red oak group following basal fire injury was about 2 feet after 20 years in studies conducted by the USDA

Forest Service. This information can be used in forest management as a guide to decide whether to cut or leave a tree with rot already established.

Copies of the 15 minute video on the **biology, identification and control of the southern pine beetle** are available free of charge from this office.

In early July, the Governor declared every county in Tennessee out of compliance with **federal air quality standards**. Researchers from Southern University and A&M College in Baton Rouge, Louisiana are determining which trees are best to soak up air pollution in Chattanooga. Species studied this summer include willow oak, laceback elm, ginkgo, yellow poplar, yoshino cherry, dogwood, crape myrtle and seedless sweetgum. Stay tuned for the results which could help air quality around heavy industry, airports and freeways.

FIELD REPORTS

INSECTS

Aphids fed on yellow poplar leaves in Davidson and Weakley Counties, white pine in Knox and Sevier Counties and caused moderate leaf dieback on river birch (D. Miller, T. Simpson, R. Stutts).

Variable Oak-Leaf Caterpillars heavily defoliated over 900 acres of oak-hickory/oak-pine types in Fayette and northwestern Hardeman Counties. Light defoliation extended into eastern Shelby, southern Haywood and southern Hardeman Counties (R. Joyce, K. M. Billingsley, P. Moditz, M. Stanley, B. Taylor, M. Watson).

Red-Headed Pine Sawflies partially defoliated a loblolly pine in McNairy County and 10 loblolly pines in Carroll County (P. Moditz, T. Tynes).

Ips Bark Beetles infested one white pine and scattered loblolly pines in Carroll and Putnam Counties and 5 loblolly pines in Weakley County (R. Stutts, T. Tynes, G. Zimmerman).

Pine Needle Midges caused needle mortality and twig distortion on 10% of Virginia pine Christmas trees in Wilson County (R. Wright).

Southern Pine Beetles infested a loblolly pine plantation in White County, a Virginia pine in Cookeville and white pines in Putnam County (J. Thompson, G. Zimmerman).

Phylloxera Adelgids caused leaf stem galls on hickories in Clay, Overton and Smith Counties (J. Replogle, J. Thompson).

Ips Beetles have infested scattered white pines over 200 acres in Hamilton County and acreage in Polk County (S. Huskey, R. Larson). Virginia pine seed orchards in Fayette County have also been infested (M. Watson).

Loblolly Pine Sawflies fed on needles of widely spaced 15 foot tall loblolly pines in southern Haywood County and Weakley County (R. Stutts, B. Taylor).

Eastern Tent Caterpillars lightly damaged black cherry leaves in Dickson, Hickman, Knox, Lewis, Montgomery and Perry Counties and was more widespread in Blount, Campbell, Claiborne, Monroe, Scott, and Union Counties (J. Elkins, C. Gearhiser, M. Huddleston, T. Simpson, B. Thompson, S. Roark, J. Walden).

Maple Petiole Borer attacks on sugar maple leaf stems were more extensive in Davidson County (B. Webster).

Leaf Rollers and Inchworms (?) lightly defoliated oaks at the Lewis/Wayne County line (G. Y. Bennett, W. Escue, L. Womack).

Fall Cankerworm trapping yielded no moths in Sullivan County (S. Bingham).

White Pine Weevils girdled twigs on 40 trees in Claiborne County (S. Roark).

Scales covered the leaves and stem of mountain laurel on Chilhowee Mountain in Blount County (T. Simpson).

Yellow Poplar Weevils fed heavily on the outer crown foliage causing noticeable leaf browning in one area of Carter County (M. Miller).

Locust Leaf Miner caused widespread heavy defoliation of black locust in Anderson, Blount, Campbell, Claiborne, Davidson, Knox, Loudon, Monroe, Montgomery, Sevier, and Union Counties (J. Elkins, M. Huddleston, S. Roark, B. Thompson, J. Walden, M. Williams).

Unknown Defoliators of red oak lightly affected trees in Cheatham and Dickson Counties (R. Leegon).

Bagworms defoliated the upper crowns of 1100 white pine, spruce and fir in Claiborne County, Leyland cypress in Maury County and plum in Hickman County (G. Gearhiser, S. Roark).

Japanese Beetles lightly chewed holes in apple leaves in Claiborne County. Most

feeding should end by the middle of August statewide (R. Emerson, S. Roark).

Jumping Oak Galls peppered 20% of the leaf surface of a white oak in Weakley County (R. Stutts).

Mites curled southern red oak leaves over 2 square miles in northeastern McNairy County (P. Moditz).

Boxelder bugs were common in yards in Knox and Sevier Counties (M. Williams).

Fall Webworms fed on pecans and persimmon leaves in Fayette County (B. Taylor).

Southern Pine Beetle infestations have spread to the western side of Sullivan County and areas of Claiborne County (S. Bingham, S. Roark).

Virginia Pine Sawflies partially defoliated Virginia pine in Wilson County (R. Wright).

Clear-Winged Borers caused limb dieback of a maple in Davidson County (D. Miller).

Southern Pine Beetle spots continue to spread in Blount, Campbell, Cocke, Hamilton, Knox, Loudon, McMinn, Meigs, Monroe, Morgan, Polk, Rhea, and Roane Counties (S. H. Gann, E. Smith, J. McGaughey, S. Huskey, J. McCarty, S. Roark, B. Thompson, M. Williams).

Nantucket Pine Tip Moths flew at the end of July beginning their third generation (R. Wright).

Locust leaf miners lightly defoliated yellowwood in Williamson County (H. Applegate).

Black Turpentine Beetles have attacked white and shortleaf pines in Bledsoe and Union Counties (S. H. Gann, S. Roark).

Southern Pine Beetle spots increased in Bledsoe, Bradley and Marion Counties and killed small numbers of trees in Clay, Lewis, Sevier and Van Buren Counties (S. H. Gann, J. Lane, J. McCarty, T. Simpson, J. Thompson, M. Williams, L. Womack).

Pityogenes Bark Beetles killed a white pine weakened by Procerum Root Disease in Coffee County (C. Strohmeier).

Gall Wasps infested 60% of red oak twigs in Weakley County and a black oak in Gibson County (R. Stutts, T. Tynes).

Borers drilled into a red oak in Overton County and hardwoods in Putnam County (J. Thompson, G. Zimmerman).

Red-headed Pine Sawfly defoliation has increased this year in Virginia pine Christmas trees in Wilson County (R. Wright).

Checkered Beetles (the primary SPB predator) have increased in visibility in Morgan County (E. Smith).

Hairy Leaf Beetles and Scarab Beetles swarmed among recently planted loblolly pines in Franklin County (J. Burckle, C. Strohmeier).

Cicadas damaged terminal twigs of hickory and maple saplings in Davidson and Montgomery Counties (M. Huddleston).

Grasshoppers were abundant in Wilson County and on oak/hickory ridges of southern Monroe County (R. Wright).

DISEASES

Procerum Root Disease killed white pine in Blount, Coffee, Lawrence, Overton, and Putnam Counties (D. Barnett, B. Thompson, J. Thompson, G. Zimmerman).

Limb Dieback of Leyland cypress was drought and/or Seiridium Canker-initiated in Hamilton and Maury Counties (C. Gearhiser, T. Simpson).

Oak Decline in East Tennessee affected a white oak in Rhea County and several oaks in Blount and Hamilton Counties (S. H. Gann, R. Rhinehart, T. Simpson).

Nectria Canker girdled two-thirds of a sassafras in Claiborne County (S. Roark).

Maple Decline caused moderate dieback of a tree in Sumner County (D. Miller).

Hypoxylon Canker infected drought-stressed red, chestnut and white oaks in Blount, Hamilton, Haywood, Hickman, McNairy, and Madison Counties (C. Gearhiser, D. Mercker, P. Moditz, R. Rhinehart, B. Taylor, T. Simpson).

Cedar Apple Rust caused widespread damage to redcedar (2 to 5 twig galls per tree) in Campbell, Claiborne and Union Counties (S. Roark, J. Walden).

Pitch Canker killed a tenth of an acre of Virginia pine in Campbell County (J. Walden) and 40% of loblolly pine terminals in a 20 acre stand in Carroll County (T. Tynes).

Taphrina Leaf Blister caused less than 30% damage to southern red oak and scarlet leaves in Hamilton, Lincoln and Monroe Counties (J. Mann, R. Rhinehart).

Canker infection of hybrid poplar killed the top of a tree in Carroll County (T. Tynes).

Ash Anthracnose infected over 50% of leaves in Sevier County.

Dutch Elm Disease killed an elm in Putnam County (G. Zimmerman).

Wood Decay caused structural damage to a sugar maple in Putnam and White Counties (G. Zimmerman).

Slime Flux infected two maples in Putnam County (G. Zimmerman).

Fusicoccum canker of Paulownia damaged 3 plantations on south and west-facing slopes on average to poor soil types in Marshall County (T. Hall, R. Wright).

Anthracnose of post oak caused irregular blotches on leaves throughout the crown in Roane County (E. Smith), as well as red maple saplings in southern Monroe County.

Black Knot Canker of plum infected nearly all limbs in Hickman and Sevier Counties (C. Gearhiser, T. Simpson).

Crown Gall Disease killed roots of a willow in Montgomery County (M. Huddleston).

Fusarium Canker of yellow poplar infected nearly 150 trees causing dieback of a dry site planting in Bedford County (T. Hall).

Witches' Broom affected a tenth of the trunk of a Virginia pine in Campbell County (S. Roark).

Mimosa Wilt caused decline and death of 6 trees in Perry and Hickman Counties (C. Gearhiser).

Fire Blight killed the branch ends of Bradford pear in Carroll County (T. Tynes).

Beech Anthracnose infection was less than 30% on leaves in Davidson and Monroe Counties.

Sooty Mold was more commonly found on yellow poplar due to heavier than normal aphid secretions in Cumberland and Sevier Counties.

Oak Decline and Mortality affected trees in Fayette, Hardin, Henry, Hickman, Lawrence, Lewis, Lincoln, Maury, Perry, Wayne and Weakley Counties in West Tennessee and the Western Highland Rim (Billingsley, Baker, Barnett, Gearhiser, Mann, Simpson, Stutts, Womack).

Phomopsis Blight killed lower branches of a juniper in Carroll County (T. Tynes).

Verticillium Wilt killed over one-half of a sugar maple in Carter County (M. Miller) and 3 in Weakley County (R. Stutts).

Decline and Wood Decay caused 50% crown dieback of a maple in Putnam County (G. Zimmerman).

Sycamore Anthracnose heavily damaged trees in Claiborne and Weakley Counties (S. Roark, R. Stutts).

Ozone damaged the new needles of white pine in southern Monroe County.

Dutch Elm Disease killed elms in Houston County (J. Woodcock).

OTHER

Drought and Decline affected scattered red oaks in Montgomery and Stewart Counties and killed 50% of a hackberry in Montgomery County (M. Huddleston).

Drought-caused redcedar mortality of saplings and pole timber continues in Campbell, Dickson, Lincoln, Marshall, Rutherford and Wilson Counties (J. Mann, J. Walden).

Drought and Cattle Soil Compaction caused decline of one acre of yellow poplar on middle slopes with sandy loam soils in Carroll County (T. Tynes).

Drought killed one third of dogwoods in one woodlot in McNairy County (P. Moditz) and half of the dogwoods in Henry County (S. Baker).

Drought thinned crabapple foliage and caused dieback of dogwood in Montgomery County yard trees (M. Huddleston).

Drought caused top dieback of pole-sized yellow poplar on sandy loam soils on lower slopes in Weakley County (M. Stanford, R. Stutts).

Drought caused dieback of 3 white pines in Bedford County and several in Lawrence County (D. Barnett, T. Hall).

Drought Stress thinned out foliage of hemlock and caused scattered dead branches in Carroll County (T. Tynes) as well as magnolia in Hamilton County (R. Rhinehart).

Ingrown Bark Folds caused weak branch unions and splitting of cherry limbs in Putnam County (G. Zimmerman).

Frost burned the leaf tips of a chestnut planting in Montgomery County (M. Huddleston) and killed the leaves of 20% of the hackberry saplings in northern Williamson County and parts of Smith County. Mature hackberries were also affected in low-lying areas of Davidson County. Yellow poplar was affected in McMinn and Davidson Counties (S. Huskey).

Yellowing of current white pine needles has occurred in Cumberland and Pickett Counties in the drainages due to unknown causes (M. Lipner).

Fire killed pine/hardwood stems less than 4 inches in Montgomery County (M. Huddleston).

Lightning killed one white oak in Weakley County (R. Stutts).

Drought browned the leaves of oak and hickory in Lincoln County (J. Mann).

Summer Dormancy caused leaf drop of yellow poplar and cottonwood and hackberry at the end of July in Davidson and Hamilton Counties (R. Rhinehart).

Prairie (?) Voles damaged sapling loblolly pines over 5 acres in Dickson County (J. Woodcock).

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